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XV.—*ASPERULAE AUSTRALIENSES*. H. K. A. SHAW AND  
W. B. TURRILL.

The vast majority of the known species of *Asperula* occur in southern Europe and the Orient (in the sense of Boissier's *Flora Orientalis*). In the Northern Hemisphere the genus extends eastwards to Japan and southwards to Szechuan. It is not known from Africa south of those parts belonging to the Mediterranean Region, or from the New World, excluding a few obvious introductions. It is of special interest to note that no species are known from the Indo-Malayan Region and that there is therefore a wide gap in the distribution of the genus between the northern and the Australasian species. Probably two species at least occur in New Zealand, where they are endemic. These are certainly closely related morphologically to the Australian *A. subsimplex* Hook. fil.

In this paper 16 species are recognized, all endemic to Australia and limited to an area south-east of a line joining Gawler Range, S. Australia, with Rockingham Bay, Queensland. Thus they are more isolated from the main area of distribution of the genus than is evident from the mere statement that they are all endemic. We are at present unable to make any suggestions, which can be supported by phytogeographical and taxonomic facts, concerning the relationship of the Australasian *Asperulae* to the northern species. All of them are constantly dioecious, a character not yet found in the European and Asiatic species, but apart from this they appear to be typical of the genus in their vegetative and reproductive parts.

We are not yet prepared to discuss the relationship of *Asperula* to *Galium*. The latter is the larger and more widely distributed genus and it is probable that one is polyphyletic relative to the other. If the species of *Asperula* have evolved from *Galium* it is possible that the Australian species have had a separate origin from those of the Northern Hemisphere, perhaps directly or indirectly from South American species. There is a very decided similarity in habit, between *Galium hypnoides* Gay from Chile and *Asperula perpusilla* Hook. fil. from New Zealand, while the latter certainly exhibits points of relationship to the Australian *A. subsimplex* Hook. fil. through an intermediate New Zealand species whose identification is at present uncertain. The resemblance in general habit is emphasized by the leaf arrangement, size, and shape, and by the solitary, axillary, stalked flowers in the Chilean and New Zealand species. The South American *Galium hypnoides*, as represented by

the one sheet at Kew, has, however, hermaphrodite flowers, with erect corolla-lobes, but with practically no corolla-tube. This contrasts with the floral structure of *A. perpusilla* which is a dioecious species with a distinct corolla-tube, better developed in the male than in the female flowers.

The Australasian *Asperulae* therefore form a group worthy of separation from the European and Asiatic groups. With our present knowledge we prefer to consider them as a section, for which we propose the name *Dioicae*. This section is, as its name indicates, distinguished by the dioecism of the flowers, to which character we have found no certain exception in the abundant Australasian material which has passed through our hands. Further convenient subdivisions into 7 series can be made chiefly on the basis of general habit. A synopsis of these is followed by an artificial key to the species and varieties, and this by descriptions, full geographical distributions, and taxonomic notes on each species.

We take this opportunity of acknowledging our indebtedness to our colleague, Mr. V. S. Summerhayes, for his assistance in connection with the geography and literature, and also to express our thanks for the facilities afforded us for examining specimens presented or lent from the Herbaria at Brisbane, Sydney, Melbourne, and Hobart (Herb. Rodway.), and the Lindley Herbarium and the University, Cambridge; and in consulting specimens at the Department of Botany of the British Museum (Natural History).

#### SYNOPSIS SERIERUM.

##### § Confertae.

Habitus varius, plerumque basi repente; folia semper sena, infima saepe reflexa; flores plerumque magni, infundibulares.

1. *conferta* 2. *scoparia*

##### § Alpinae.

Plantae repentes et intricatae vel suberectae; omnes partes in siccitate fusco-brunnescentes, nonnunquam fere nigrescentes; folia propensionem quandam ad indolem quasi subcoriaceam exhibentia, numero varia.

3. *Gunnii* 4. *pusilla* 5. *minima*

##### § Quadrifoliae.

Caules debiles, graciles, subcaespitosi; folia semper quaterna; inflorescentiae plerumque axillares, subterminales; flores parvi, tubo brevi.

6. *subsimplax*

##### § Verticillatae.

Planta minuscula; caulis et folia gracilia, sed firma; folia sena; flores majusculi, subcapitati.

7. *wimmerana*

## § Scabridae.

Caulis parte inferiore gracilis, efoliatus, parte superiore validior, foliosus, cum foliis rigidus et scaberrimus; flores parvi; fructus leves, pallide brunnei.

8. *lissocarpa*

## § Lignosae.

Plantae fere suffruticosae, caudice crasso valde lignificato, caulibus erectis, rigidis, lignescentibus, saepe virgatis; folia plerumque erecta, quaterna vel sena; inflorescentiae terminales.

9. *Cunninghamii* 10. *subulifolia* 11. *ambleia*

## § Flaccidae.

Caules elongati, debiles, semi-scandentes; internodia plerumque longissima; folia flaccida vel tenuiter herbacea, forma varia, numquam rigida; flores ♂ et ♀ insigniter diversi, ♀ tubo brevissimo.

12. *euryphylla* 13. *asthenes* 14. *Charophyton* 15. *gemella*  
16. *geminifolia*.

### CLAVIS ANALYTICA.

#### A. *Folia bina*.

Flores subcapitati; ♂ tubus elongatus, infundibularis.....  
16. *geminifolia*

Flores in cymis diffusis divaricatum ramosis dispositi; ♂ tubus brevissimus fere obsoletus.....15. *gemella*

#### B. *Folia quaterna*.

Folia in quoque verticillo duo longiora, duo breviora :

Folia rigida, adpresso-erecta, subulata, obtusa.....11. *ambleia*

Folia flaccida, patentia

Folia oblanceolata.....13. *asthenes*

Folia linearia.....15. *gemella*

Folia in quoque verticillo aequilonga :

Folia linearia, acuta.....6. *subsimplex*

Folia haud linearia :

Folia latissime elliptico-obovata, 4-5 mm. lata.....

12. *euryphylla* var. *tetraphylla*

Folia obovato-oblonga, ad 2.5 mm. lata.....3. *Gunnii*

#### C. *Folia sena*.

Folia stricta caulisque robustus valde deflexo-scaberrima et rigida ; tota planta in siccitate pallescens.....8. *lissocarpa*

Folia caulisque nunquam valde scaberrima (interdum pubescentia vel ciliata) :

Planta caudice lignoso praedita, suffrutescens; folia plerumque erecta :

Folia subulata vel lineari-subulata, acutissima, tomentella ; costa valida.....10. *subulifolia*

Folia linearia, subacuta vel subobtusa, pubescentia ; costa tenuis.....9. *Cunninghamii*



Planta caudice lignoso carente, herbacea; folia plerumque patentia:

Folia pagina superiore plus minusve pubescentia:

Planta erecta, alta, in siccitate etiam virescens; folia lata  
12. *euryphylla*

Planta humilis, plerumque repens, in siccitate plus minusve  
nigrescens:

Planta parva, muscosa; folia minima, linearia, acuta.....  
5. *minima*

Planta major, tota hispido-pubescentia:

Folia elliptico-obovata, subacuta...3. *Gunnii* var. *curta*

Folia lineari-oblonga vel oblanceolata, subobtusata.....  
4. *pusilla*

Folia pagina superiore glaberrima, margine tamen saepe ciliata:

Folia (saepe longe) hyalino-acuminata:

Caulis tomentosus vel tomentellus.....2. *scoparia*

Caulis glaber.....1. *conferta* var. ? *scoparioides*

Folia plerumque acuta sed haud hyalino-acuminata:

Folia lata, plus minusve obovata:

Folia in siccitate nigrescentia, ad 2.5 mm. lata...3. *Gunnii*

Folia in siccitate etiam virescentia, ad 5 mm. lata.....  
12. *euryphylla*

Folia anguste linearia

Folia elongata, flaccida, loriformia; caulis et internodia  
plerumque elongata, subflexuosa; corollae brevissimae

14. *Charophyton*

Folia vix 1 cm. excedentia, rigidiora; caulis et internodia  
breviora; corollae (♂ saltem) infundibulares

Folia plerumque erecta, flexuosa; subcartilaginea; caulis  
gracilis, humilis, parum ramosus.....7. *wimmerana*

Folia plerumque patentia, inferiora reflexa; caulis elatior,  
saepe pervagus.....1. *conferta*

#### *D. Folia octona*

Planta humillima, muscosa, repens; folia minima, linearia.....  
5. *minima*

Planta mediocris, erecta; folia oblonga vel suboblanceolata, ad  
9 mm. longa.....12. *euryphylla* var. *octophylla*

The following abbreviations are used in the citation of specimens:—N.D. when no date is recorded; B.M. when specimens are at the British Museum (Natural History); H. for specimens at Hobart (Herb. Rodway.); W. for specimens at the National Herbarium of New South Wales, Sydney. Where no indication is given the specimens are at Kew.

1. *Asperula conferta* Hook. fil. in Lond. Journ. Bot. vi. 464 bis (1847); Flor. Tasm. i. 169 (1857-58?). Benth. Flor. Austr. iii. 444 (1866) (p.p. et excl. var.). F. M. Bailey, Queensl. Flor. iii. 782 (1900) (excl. var.). L. Rodway, Tasm. Flor. 71 (1903).

*Herba* perennis. *Radix* fibrosa. *Rhizoma* longe repens, ramosa, lignosa, c. 1 mm. diametro. *Caules* numerosi, plus minusve caespitosi, 3–30 cm. longi, ad 1.0 mm. diametro, suberecti vel adscendentes, praecipue supra medium ramosi, subflexuosi, glabri vel glabrescentes vel asperuli; internodiis 0.3–4.0 cm. longis. *Folia* sena, patentia vel saepe reflexa, subrigida, linearia vel lineari-oblonga, acuta vel breviter acuminata, 1–11 mm. longa, 0.3–1.0 mm. lata, margine plana vel recurva, glabra vel saepissime margine costaque aspera. *Inflorescentiae* terminales et subterminales, plerumque ternae, pauciflorae, vix subcapitatae, folia suprema plerumque superantes. *Flores* dioici, plerumque majusculi, rarius pusilli: ♂ *receptaculum* parvum, obovoideum, corollae tubo paullo latius (raro angustius); *corollae* ad 4.5 mm. longae, tubus infundibularis segmentis oblongis acutis vel subacutis, patentibus vel reflexis, aequilongus vel paullo longior; *staminum* filamenta gracilia, elongata, ad 1 mm. longa, antheris oblongo-ellipticis c. 0.5 mm. longis; *styli* obsoleti: ♀ *receptaculum* obovoideum vel obreniforme, subdidymum, ad 1.4 mm. diametro; *corollae* tubus subcylindricus vel superne levissime ampliatus ad 1.0 mm. longus segmentis oblongis vel lineari-oblongis subacutis inflexo-cuspidatis subduplo brevior; *stamina* minuta; *styli* ad 3 mm. longi exserti, stigmatibus majusculis subglobosis. *Fructus* mericarpia globoso-reniformia, valde rugosa, atro-brunnescentia, 1–2 mm. diametro, altero saepe abortu.

QUEENSLAND. ♂: no locality or date, *T. L. Mitchell* [B.M.]; Killarney, Oct. 1891, *F. M. Bailey*; Jennings, Dec. 1903, *J. H. Maiden* and *J. L. Boorman*. ♀: Peak Downs, N.D., *F. von Müller*; Jimbour, Dec. 1875, *F. M. Bailey* (2 spms.: one dwarf and compact, the other branched and diffuse); Toowoomba, hill side, 9 Oct. 1886, *T. S. Lea* [B.M.]; Hendon, Dec. 1912, *C. T. White*. ♂ & ♀: Killarney, Nov. 1917, *C. T. White*; Silverwood, Aug. 1922, *C. T. White* 1747. Sex indet.: Morven, Dec. 1890, *F. M. Bailey* (leaves mostly very short and narrow); Roma, Apr. 1909, *C. T. White*; MacPherson Range, fairly high, open country amongst grass and stones, Feb. 1911, *C. T. White*; Toowoomba, Apr. 1916, *C. T. White*.

NEW SOUTH WALES. ♂: Parramatta, 1799–1810, *G. Caley* [B.M.]; cow pastures, no loc., Oct. 1801, *G. Caley* [B.M.]; no loc., 1818, *Fraser* 177 [B.M.]; Bathurst, Oct. 1822, *A. Cunningham* 86; Moonan Brook, nr. Scone, 1833, *Miss Carter* (flowers very large); Jenolan Caves, Oct. 1899, *W. F. Blakely*; South Goulburn, Oct. 1906, *J. Lumsden* 22 [W.]; South Goulburn, Nov. 1906, *J. Lumsden*; Hunter R., Lochinvar, 24 Aug. 1909, *R. H. Cambage* 2223 [W.]; Boggabri, Oct. 1912, *R. H. Cambage*; Temora, Sept. 1915, *Rev. J. W. Dwyer* [W.]; Temora, Oct. 1915, *Rev. Dewyer* (sic!); Gulgong, Sept. 1916, *J. L. Boorman* (flowers large); Tenterfield, no date or collector (? *C. Stuart*), ex Nat. Herb. Vict., Melb., no. 23, in Herb. Kew. ♀: no loc., 8 Jan. 1801, *G. Caley*; Bathurst, open plains, 1817, *A. Cunningham* 47, and 1822, *A. Cunningham* 86 [B.M.]; Western



Interior N.S.W., 24 Apr. 1817, *A. Cunningham* (Mr. Oxley's 1st Expedition); no loc., 24 Apr.—?, *A. Cunningham*; New Holland, N.D., *A. Cunningham* (Hooker, 1835); Hunter R., N.D., *U.S. Exploring Expedition*; near Appin, N.D., *Backhouse*; Armidale, Jan. 1883, *J. W. Statter* [B.M.]; between Lachlan R. and Darling R., 1885, *J. Bruchner* (dwarf and compact form); Nimitybelle to Cooma, Dec. 1896, *J. H. Maiden*; Warrah, Oct. 1897, *J. Gregson*; Bowral to Bullio, Oct. 1905, *J. H. Maiden* (leaves very long, flowers large); Goulburn, Jan. 1907, *S. Styles* (leaves nearly all reflexed); Denman, Sept. 1908, *W. Heron*; Barrington R., nr. Gloucester, Aug. 1909, *W. Heron*; Canberra, Nov. 1911, *R. H. Cambage*; Glen Innes, Nov. 1914, *E. Breakwell*; Georges R., Oct. 1918, *J. L. Boorman*; Casule—Glenfield, Geo. R., Oct. 1918, *J. L. Boorman*; Orange, N.D., *J. L. Boorman*; Cavan, nr. Yass, N.D., *J. T. Calvert*; Richmond R., N.D., *Dr. Curdie*; New England, forest land, N.D., ? *Clifton*. ♂ and ♀: Port Jackson, N.D., *R. Brown* 3499 [B.M.]; Rydal, Oct. 1897, *Mrs. J. McNab*; Moona Plains, Walcha Distr., Apr. 1903, *A. R. Crawford*. Sex indet.: Perth, nr. Bathurst, March 1901, *J. L. Boorman* (leaves crowded, reflexed); Georges R., Nov. 1910, *J. Staer* (leaves very long, distant, reflexed).

VICTORIA. ♂: Wendoo [?=Wando] Vale, [nr. Casterton], ? 14 Sept. 1843, *Robertson*; Yarra, N.D., *F. von Müller*; no loc. or date, *F. von Müller* (ex Phytol. Mus. Melb.); Upper Yarra, Oct. 1893, *C. Walter*; Hawkesdale, Oct. 1901, *H. B. Williamson*; Pearcedale, 1921, *A. G. F. Gates* (abnormal owing to disease). ♀: St. Kilda, 1852, *F. von Müller*; dry places on the Yarra-Yarra, Nov. 1853, *F. von Müller* [B.M.]; Melbourne, very common, 9 Oct. 1853, *F. M. Adamson* 157; nr. Mount McIvor, [1854], *Blandowski*; Pyrenean Mountains, Port Phillip, 1856, *D. E. Cooper* [B.M.]; Castlemaine, 15 Sept. 1860, *R. J. Kendall* 76; Victoria Ra., Grampians, N.D., *Carl Wilhelmi* (flowers very small); Hume R. [=Murray R.], 1874, no collector; Grampians, 1892, *C. Walter*.

SOUTH AUSTRALIA. ♂: hills above Magill, 26 Sept. 1885-6, *Rev. T. S. Lea* [B.M.]. ♀: Mount Gambier, N.D., *F. von Müller*; Port Pirie, Sept. 1901, *M. Koch*.

TASMANIA. ♂: no loc., 1831, *Lawrence* 115 (in Herb. Hook. in Herb. Kew.) (lectotype); no loc. or date, *Lawrence* "9 & 115"; New Norfolk, 9 Oct. 1839, *R. Gunn* 159 [B.M.]; "side of drain at my allotment," Launceston, 14 Oct. 1843, [*R. Gunn*] 159 [W.]; no loc. or date, *Archer* (Tasmanian forms of *A. oligantha*, no. 4). (The last three sheets quoted agree exactly with lectotype.) No loc. or date, *Archer* (Tasm. forms of *A. oligantha*, no. 3); wet places, Launceston, 14 Oct. 1843, *R. Gunn* 159; no loc., 1835, *R. Gunn* 159; Port Dalrymple, Van Diemen's Island, *Paterson* [B.M.]; no loc. or date, *Dr. Storey*. ♀: Hobart, 29 or 30 Nov. [sic!], *G. Caley* [B.M.]; Hobart, 1834, *J. Backhouse* 174, 175 [B.M.]; St. Patrick's R., 14 Dec. 1843, *R. Gunn*; Ormley, N.D. *A. Simson*; no loc. or date, *Stuart*; Western Mts., 4000 ft., Dec. 1908, *L. Rodway* [H.]. ♂ & ♀:

Domain, Hobart, Sept. 1892, *L. Rodway* [H.]; Brighton, Nov. 1900, *L. Rodway* [H.].

β **abbreviata** nom. nov. *Habitus* humilis, compactus, fere pulvinatus, foliosus; *internodiis* plerumque folio brevioribus.

TASMANIA. ♂ & ♀: "collected at Woolnorth 16 Oct. 1836 and 21 Sept. 1837. It is there common on sandy soil." *R. Gunn* 890.

γ **scoparioides** var. ? nov. *Folia* plerumque patentia, elongatiora, longius acuminata; ad typum transiens.

QUEENSLAND. ♀: Mitchell (Camp 29), Aug. 1846, *T. L. Mitchell* 515 (type).

VICTORIA. Sex indet.: Port Philip, N.D., *S. Mossman* 443.

TASMANIA. ♂: New Norfolk, N.D., *J. D. Hooker* 1012; no loc., 1844, *R. Gunn* 159; no loc., 1831, *Lindley*; Golosa Road, Nov. 1922, *L. Rodway* [H.]. ♀: no loc., 1831, *Lindley*. Sex indet.: Clarence Plains, 12 Oct. 1840, [*R. Gunn*] 1125.

*A. conferta* is at once the most widespread, the most abundant and the most variable of all the Australian *Asperulae*. Its geographical range includes those of all the other species. In the Kew Herbarium, nearly 50% of the Australian *Asperula* material is *A. conferta*. On account of its great variability it is extremely difficult to characterize satisfactorily, yet perfectly easy of recognition, nor have we been able to separate more than two "varieties" (in a non-committal sense), worthy of distinct names, from the apparently heterogeneous mass of material before us.

We have made *Lawrence* 115 the lectotype, rather than *Gunn* 159, because the latter includes a number of different forms gathered at various times and places, whereas Lawrence's is quite homogeneous. It should, however, be pointed out that Lawrence's specimens are not quite "typical" examples of the species, being exactly matched only by the three sheets, also from Tasmania, quoted immediately after it, above. But we do not feel justified in separating the remainder of the material from these, either as varieties or forms, the differences not being sufficiently important.

The somewhat bewildering variation of this species is no doubt accountable for the fact that von Müller decided that all Australian *Asperulae* (with the exception of his own *A. geminifolia*) were simply forms of a single species to which he gave the name *A. oligantha*. (This name was never properly published.) He was followed in this opinion by Rodway in his *Tasmanian Flora* (1903, pp. 70, 71). A more intensive examination of the various forms, both in the field and in herbaria, would have sufficed to dispel this somewhat uncritical view.

The best characters for recognizing the plant (in the dried state) are: the leaves of the lower part of the main stems (frequently also of the upper part, and sometimes those of the branches) are



closely reflexed to the stem, except in young specimens, and are constantly senate, linear, acute (not long-acuminate as in *A. scoparia*); the habit is generally straggling and untidy, though sometimes erect.

The forms which we have grouped under the name  $\gamma$  *scoparioides* make a decided approach towards some lax forms of *A. scoparia*, but never possess the cauline indumentum nor the hyaline acuminate leaf-axes of that species.

The plant we have named  $\beta$  *abbreviata* is only known to us from the two gatherings of Gunn (no. 890) from Woolnorth, N.W. Tasmania. It is the "*var.  $\beta$ . internodiis folio brevioribus, caule abbreviato*" of Hooker (in Lond. Journ. Bot. vi. 464 bis, 1847). Though the internodes are rather shorter than usual, it appears to be a distinctly luxuriant form, judging by the breadth and consistency of the leaves.

2. *Asperula scoparia* Hook. fil. in Lond. Journ. Bot. vi. 463 bis (1847); Flor. Tasm. i. 169, t. XL A (1857-58?). Benth. Flor. Austr. iii. 444 (1866). F. M. Bailey, Queensl. Flor. iii. 782 (1900). L. Rodway, Tasm. Flor. 71 (1903).

*Herba* perennis. *Radix* fibrosa. *Rhizoma* longe repens, valde ramosa, lignosa, c. 1.0 mm. diametro. *Caules* numerosi, e nodis rhizomatis orientes, plerumque humiles, c. 4-10 (rarius ad 16) cm. longi, ad 1.0 mm. diametro, decumbentes, adscendentes vel suberecti, basi praecipue (superne brevius) ramosi, subflexuosi, brevissimi et plerumque densissime (rarius sparse) puberuli; internodiis 0.5-2.0 cm. longis. *Folia* sena, adscendenti-patentia interdum recurva, subrigida, linearia, longe hyalino-acuminata, acutissima, 4-9 mm. longa, raro ad 1.0 mm. lata, margine plana vel recurva nonnunquam setuloso-ciliata, utraque pagina glaberrima. *Inflorescentiae* terminales, subpauciflorae, magna ex parte foliis supremis longis celatae. *Flores* dioici, majusculi: ♂ *receptaculum* inter species Australienses majusculum, truncato-reniforme, ad 1.2 mm. diametro, subdidymum, glabrum; *corollae* tubus longus, subcylindricus, sursum levissime ampliatus, c. 3 mm. longus, basi c. 0.8 mm., fauce c. 1.4 mm. diametro, segmentis oblongis subacutis 1.5-2.0 mm. longis, apice inflexo-cuspidatis; *staminum* filamenta brevia, antheras oblongas subaequantia; *styli* longi, corollae tubum aequantes, stigmatibus globosis: ♀ *receptaculum* parvum, subglobosum, c. 1.0 mm. diametro; *corollae* tubus subcylindricus c. 1.5 mm. longus segmenta oblonga acuta subaequans; *stamina* minuta; *styli* c. 3.0 mm. longi exserti breviter furcati, stigmatibus majusculus globosis. *Fructus* raro didymi, mericarpiis (? maturis) parvis, c. 1.5 mm. diametro, globosis, rugosis, atrobrunneis.

NEW SOUTH WALES. ♂ & ♀: near Appin, N.D., Backhouse. ♀: Mt. Victoria, Oct. 1881, E. Betche; Brown Mts., nr. Littleton, Feb. 1893, E. Betche; Braidwood, Nov. 1908, R. H. Cambage; Booroomba, Queanbeyan, on granite, 6 Nov. 1911, R. H. Cambage 3017; Queanbeyan, Dec. 1911, R. H. Cambage.



VICTORIA. ♂: Upper Yarra, Oct. 1893, *C. Walter*.

TASMANIA. ♂ & ♀: Lawrenny (?), N.D., *J. D. Hooker 1007* (type).  
♂: Glen Leith, 14 Oct. 1840, *R. Gunn 1124*; New Norfolk, 18 Nov. 1840, *M.B.* in *Gunn's Herb. 1124*. ♀: New Norfolk, 6 Nov. 1840, *M.B.* in *Gunn's Herb. 1124*.

var. **ulicina** var. nov.

*Folia* rigidissima subulato-spinescentia plerumque parallela, costa pervalida; *fructus* mericarpiis duplo maioribus.

NEW SOUTH WALES. ♂: Monga, Oct. 1926 (*sic!* sed fieri non potest), *W. Bauerlen*. ♀: Riedsdale, Braidwood, Oct. 1890, *W. B[auerlen?]*; Yarrogobilly Caves, Feb. 1897, *E. Betcher*.

In general habit the specimens often recall forms of *Salsola Kali* L. This is especially true of Backhouse's specimen in *Herb. Kew.*, quoted above. The species is readily distinguished from *A. subulifolia* Shaw et Turrill, the only other Australian species with a strongly acuminate leaf-apex, by the absence of the thick woody stock (*caudex*) and stems and of the fine continuous tomentum over the leaf-surface (though the margin may be ciliate), and by the leaves being parallel-sided (linear), not narrowed continuously from base to apex (subulate).

From its close morphological ally, *A. conferta* Hook. fil., *A. scoparia* may be separated by the acuminate leaf-apices referred to above and by the presence, to a greater or less degree, of a short tomentum on the stem. Typical examples have also a characteristic habit which is easier to recognise than to describe.

On the type-sheet there are two small specimens with quite glabrous stems. It is probable that these should be referred to *A. conferta* Hook. fil., var. ?  $\gamma$  *scoparioides* Shaw et Turrill.

The variety *ulicina* is merely an extremely rigid form and is connected by intermediates with the typical form.

3. **Asperula Gunnii** Hook. fil. in *Lond. Journ. Bot.* vi. 463 *bis* (1847); *Flor. Tasm.* i. 168 (1857-58?). *Benth. Flor. Austr.* iii. 445 (1866) (excl. var.). *L. Rodway, Tasm. Flor.* 71 (1903).

*Herba* perennis. *Radix* fibrosa, rubro-tingens. *Rhizoma* repens vel suberectum, 1.0-1.5 mm. diametro. *Caules* caespitosi, suberecti vel decumbentes, plerumque basi ramosi, ad 2 dm. longi, in regionibus alpinis nonnunquam humillimi 2 cm. tantum longi, quadranguli, subscabro-puberuli, parte inferiore glabrescentes; internodiis 0.5-3.0 cm. longis. *Folia* quaterna vel sena (raro terna vel quina), patentia, subcoriacea, obovata vel obovato-oblonga, rarius spathulata vel oblanceolata, basi angustata, raro breviter petiolata, apice acuta raro rotundata, 3-10 mm. longa, ad 2.5 mm. lata, utraque pagina glaberrima, margine anguste recurvo plerumque scaberrimo, costa tenue. *Inflorescentiae* in siccitate raro conspicuae, terminales et axillares, pauciflorae, raro subcapituliformes. *Flores* dioici: ♂ *receptaculum* parvum, subglobosum; *corollae* c. 3 mm. longae

segmenta oblonga inflexo-cuspidata tubum subcylindricum levissime sursum ampliatus subaequantia; *staminum* filamenta breviter antheras elliptico-oblongas aequantia; *stylus* nullus: ♀ *receptaculum* paullo majus, subglobosum; *corollae* 2 mm. longae tubus amplius segmenta oblonga acuta inflexo-cuspidata subaequans; *stamina* minuta; *styli* corollam superantes, breviter furcati, stigmatibus magnis globoso-reniformibus. *Fructus* mericarpia globosa, 1-2 mm. diametro, nigra, glabra, ut videtur carnosae.

NEW SOUTH WALES. ♂: nr. Appin, N.D., *Backhouse*; Blue Mts. (Lithgow), Oct. 1881, *E. Bêche*; Mt. Bimberi, Queanbeyan, 6100 ft., 15 Jan. 1912, *R. H. Cambage* 3302. ♀: Munyang [=Muniong] Mts., N.D., *F. von Müller*; Mt. Kosciusko, 6000-6500 ft., Feb. 1893, *R. Helms*; Mt. Kosciusko, 5500 ft. to summit, Jan. 1898, *J. H. Maiden*; Mt. Kosciusko, Jan. 1899, *J. H. Maiden and W. Forsyth*. VICTORIA. ♂: Mt. Feathertop, 4000 ft., N.D., *A. J. Tadgell*.

TASMANIA. ♂ & ♀: Mt. Wellington, 31 Jan. 1840, *R. Gunn* 1123; Nive River, Oct. 1840, [*R. Gunn*] (type); Marlborough, 17 Oct. 1840, *J. D. Hooker* in *Gunn's* Herb. 1123; no loc., 1844, *R. Gunn* 1123; Arthur's Lakes, 17 Jan. 1845, *R. Gunn* 1123; Western Mountains, N.D., *Lawrence* 326; no loc. or date, *Archer*; Mt. Wellington, 1892, *L. Rodway*; St. Patrick's Plain, Dec. 1903, *L. Rodway*; Mt. Field, 3000 ft., Dec. 1906, *L. Rodway*.

var. *curta* (Hook. fil.) var. nov. *Galium curtum* Hook. fil. in *Lond. Journ. Bot.* vi. 462 bis (1847).

*Caules* humiles ad 6-5 cm. alti dense deflexo-pubescentes. *Folia* parva elliptico-oblonga plerumque subacuta ad 4 mm. longa, margine conspicue ciliata nonnunquam pagina superiore pubescentia. *Flores* non visi.

TASMANIA. Hampshire Hills, 1837, *R. Gunn* 892.

After *A. euryphylla*, this species has broader leaves than any other in Australia. The distinguishing marks between *A. Gunnii* and *A. euryphylla* var. *octophylla* (the only variety of the latter species with which the present is likely to be confused) will be found under that species.

Inconstancy in the number both of leaves in a whorl and also of parts of the flower appears considerably more frequent in this species than in any other we have observed. The leaves vary in number from three to six, four and six being the most frequent numbers. In the flowers, trimery and pentamery appear almost as common as tetramery, and all these may occur in the same inflorescence.

As pointed out (*infra*) under *A. pusilla*, the leaves are quite glabrous on the upper surface except in the var. *curta*. This plant is at present known only from a single gathering of *Gunn*, in *Herb. Kew.* and in *Herb. Lindl.* at Cambridge. The specimens are all flowerless. Since the pubescence of the upper leaf-surface invalidates

this character (as far as this variety is concerned) as a point of distinction from *A. pusilla*, another must be sought and is found in the shape of the leaves. Those of *A. Gunnii* var. *curta* are elliptic-obovate, subacute; in *A. pusilla* they are linear-oblong to oblanceolate, and subobtusely.

4. ***Asperula pusilla*** Hook. fil. in Lond. Journ. Bot. vi. 464 bis (1847); Flor. Tasm. i. 169, t. XL B (1857-58?). *A. Gunnii* Hook. fil. var. *pusilla* (Hook. fil.) Benth. Flor. Austr. iii. 445 (1866).

*Herba* perennis. *Radix* fibrosa. *Rhizoma* tenue, repens. *Caules* plerumque humiles, dense caespitosi, suberecti, ramosi, 3-12 cm. longi, scaberulo-pubescentes vel nonnunquam glabri, pro planta robustiores; internodiis plerumque confertis, inferioribus ad 3 cm. longis. *Folia* sena, patentia interdum recurva, subrigida, lineari-oblonga vel oblanceolata, 2-8 mm. longa, ad 1.5 mm. lata, utraque pagina pubescentia (rarissime glabrescentia), margine revoluta et costa inferne plus minusve scaberulo-ciliata. *Inflorescentiae* laterales vel subterminales, raro revera terminales, pauciflorae, diffusae, raro densiores subcapitati. *Flores* dioici: ♂ *receptaculum* subglobosum, 0.5 mm. diametro; *corollae* tubus breviter infundibularis vix 1 mm. longus segmenta oblonga subacuta inflexo-cuspidata subaequans; *staminum* filamenta breviter antheras lineari-oblongas vix aequantia; *styli* tubo paullo breviores: ♀ masculis similes, sed *receptaculo* paullo majore, *corollae* tubo subbreviore, magis cylindrico, *staminibus* valde redactis, *stylis* corollam multo superantibus stigmatibus ovato-reniformibus. *Fructus* brunnescentes vel nigri, mericarpiis globosis, rugosis, c. 1.5 mm. diametro.

NEW SOUTH WALES. ♂: Tingiring Mts., 4500 ft., 1887, *W. Bauerlen* 548; Mt. Kosciusko, 5500 ft. to summit, Jan. 1898, *J. H. Maiden*; Mt. Kosciusko, Feb. 1914, *J. H. Maiden*. ♀: Mt. Kosciusko, Feb. 1901, *R. Helms*.

VICTORIA. ♂: Wimmera (?), N.D., *Dallachy*. ♀: Watts Creek, McVeigh's, 29 Feb. 1924, *A. C. F. Gates*.

TASMANIA. ♂: Hampshire Hills, Feb. 1837, *R. Gunn* 557, 891 (type); no loc., 1844, *R. Gunn* 557; no loc. or date, *R. Gunn* 891; no loc. or date, *Lawrence* 329; no loc. or date, *J. D. Hooker* 1010; no loc. or date, *Archer*; Hampshire Hills, N.D., *J. Milligan* 1193 [B.M.]; Alpline, N.D., *Dr. Milligan*; Distillery Creek, nr. Launceston, Feb. 1920, *L. Rodway*. ♂ & ♀: Arthur's Lakes, 17 Jan. 1845, *R. Gunn* 557; on rocks, side of Western Mountains, alt. 3000 ft., 16 Feb. 1843, *R. Gunn* 557 [B.M.]. ♀: Arthur's Lakes, 17 Jan. 1845, *R. Gunn* 891; Hampshire Hills and Woolnorth, N.D., *R. Gunn* 557; Mt. Barrow, Dorset, Jan. 1922, *Rev. H. M. R. Rupp*. Sex indet.: St. Patrick's River, 16 Nov. 1844, *R. Gunn* 557.

In general habit *A. pusilla* is intermediate between the less robust *A. minima* and the generally larger *A. Gunnii*. The stems are usually numerous and caespitose, as in *A. minima*, but specimens are not infrequent with the laxer habit of *A. Gunnii*. The leaves also



are intermediate, except that they are more pubescent than in either of the last-named species.

Bentham reduced this species to a variety of *A. Gunnii* in the Flora Australiensis. In cases of doubt which may arise, there is always one definite distinguishing character between *A. pusilla* and *A. Gunnii*: the upper surface of the leaves of *pusilla* is always hispid-pubescent, whereas in *Gunnii* it is quite glabrous. We have never known this character to vary (except in the case of *A. Gunnii* var. *curta*, q.v.); and, taken in conjunction with other characters less easy to express, and perhaps less constant, it appears to be an infallible criterion.

*A. pusilla* seems to be essentially an inhabitant of the mountainous districts of south-eastern New South Wales, eastern Victoria and central Tasmania. We cannot therefore help regarding the specimen purporting to have been collected in Wimmera by Dallachy, with a certain amount of suspicion. That the specimen is *A. pusilla* we have no doubt, but that it came from Wimmera—low, flat country composed almost entirely of *Eucalyptus* scrub, and hundreds of miles away in the north-west of Victoria—seems extremely unlikely.

5. *Asperula minima* Hook. fil. in Lond. Journ. Bot. vi. 464 bis (1847); Flor. Tasm. i. 170 (1857-58?). Benth. Flor. Austr. iii. 445 (1866). L. Rodway, Tasm. Flor. 71 (1903).

*Herba* perennis. *Rhizoma* tenue, flexuosum, intricate repens. *Caules* humiles, caespitiosi, erecti vel adscendentes vel subprostrati; basi et apice ramosi ceterum plerumque simplices, 5-6 cm. longi, glabri vel raro parcesime scaberuli. *Folia* sena, interdum octona, patentia, anguste oblanceolata, subacuminata, acuta, 2-4 mm. longa, c. 0.5 mm. lata, pagina superiore densiuscule scaberula, margine revoluta rarius subplana, apice interdum brevissime hyalino-setifera. *Inflorescentiae* numerosae, terminales et subterminales, cymosae. *Flores* dioici: ♂ longiuscule pedunculati, pedunculis pedicellisque gracillimis; *receptaculum* parvum, obovoideum; *corolla* infundibularis, c. 1.5 mm. longa, segmentis recurvis deltoideo-oblongis tubum subaequantibus; *staminum* filamenta brevissima, antheris breviter oblongis; *styli* minuti, tubo duplo vel triplo breviores, stigmatibus globosis: ♀ breviter (1 mm.) pedicellati; *receptaculum* parvum, obovoideum, haud 1 mm. longum; *corollae* brevissime infundibularis minutissime (?glanduloso-) pubescentis segmenta oblongo-deltoidea c. 1 mm. longa tubo subduplo longiora; *stamina* minuta; *styli* alte connati robustiores tubo subduplo longiores, stigmatibus majusculis globosis. *Fructus* ignoti.

VICTORIA. ♂: Hall's Gap, Grampian Mountains, Dec. 1912, J. E. Tilden 850, 888 [B.M.].

TASMANIA. ♂: George Town, 21 Nov. 1842, 9 Jan. 1843, and 1844, R. Gunn 1251; Pt. Effingham, 3 Dec. 1841, R. Gunn "1251 or 557" (sic!) [W.]; no loc. or date, Archer; "Van Diem. Land", no date

or collector. ♂ & ♀: Port Dalrymple, Oct. 1804, *R. Brown* 3498 [B.M.].

*A. minima* is the smallest known Australian *Asperula*. The stems arise from a slender intricately branched rhizome but are usually sufficiently numerous to give a general caespitose appearance to the plants. The leafy and flower-bearing stems have many nodes and short internodes. The small leaves are usually in sixes and spread at right angles to the thin stems.

6. *Asperula subsimplex* Hook. fil. in Lond. Journ. Bot. vi. 463 bis (1847); Flor. Tasm. i. 168 (1857-58?). Benth. Flor. Austr. iii. 444 (1866). L. Rodway, Tasm. Flor. 71 (1903).

*Herba* perennis. *Radix* ignota. *Rhizoma* ut videtur tenuissimum, suberectum. *Caules* plurimi, conferti, erecti, raro decumbentes, graciles, flaccidi, stricte ramosi, 1-2 dm. longi, glaberrimi; internodiis c. 1-2 (raro ad 3.5) cm. longis. *Folia* quaterna, patentia rarius suberecta, flaccida, linearia, lineari-lanceolata vel suprema brevissima ovato-lanceolata, utrinque angustata, acuta vel subacuta, 2-8 (plerumque c. 5) mm. longa, ad 1 mm. lata, utraque pagina glaberrima, margine anguste recurvo vel subplano, foliorum superiorum nonnunquam obscure scaberulo, costa tenuissima. *Inflorescentiae* axillares, numquam revera terminales etsi caulis apicem interdum superantes, perpauciflorae (1-3); pedunculis strictis folia aequantibus vel subduplo superantibus, raro pedunculo subobsoleto et tunc pedicellis elongatis. *Flores* dioici, (rarissime, ut videtur, hemaphroditi), in siccitate inconspicui: ♂ *receptaculum* parvum, applanato-suborbiculare; *corolla* breviter infundibularis, c. 2 mm. longa, segmentis patentibus deltoideo-oblongis obscure cuspidatis tubum subaequantibus; *staminum* filamenta gracilia, antheris brevissime oblongis; *styli* brevissimi, distincti: ♀ *receptaculum* applanato-obovoideum, vix 1 mm. diametro; *corolla* ♂ similis, segmentibus tamen paullo latioribus tubo duplo longioribus; *stamina* minuta; *styli* exserti, divaricati, stigmatibus subglobosis nonnunquam setosis. *Fructus* maturi non visi; immaturi brunnescentes, subrugosi, vix 1.5 mm. diametro.

TASMANIA. ♂: no loc., 1835 & 1844, and Circular Head, in wet places, 25 Dec. 1837 [B.M.], *R. Gunn* 407; no loc. or date, *Archer*; Bellerive, Nov. 1891, *L. Rodway*. ♀: Circular Head, 25 Dec. 1837 (type), and Lake St. Clair, 13 Feb. 1845, and no loc. or date, *R. Gunn* 407; no loc. or date, *R. Gunn* 882; Formosa, N.D., *Lawrence* 242; Derwent R., Iter Austr. 1802-5, *R. Brown* 3488. ♂ & ♀: no loc. or date, *R. Gunn* 407. ♀ (?): no loc. or date, *Dr. Storey*.

forma **aquatica** f. nov.

Omnibus partibus (exc. floribus) majoribus, *caulibus* robustioribus ad 2.5 dm. longis, acutissime quadrangulis, *foliis* plerumque 5-10 mm. longis 1.0-1.5 mm. latis, aliquantulum scabridioribus.

VICTORIA. ♀: in the water, Wendee [=Wando] River, [nr. Casterton], 1 Dec. (12 Jan. ?) 1844, *Robertson* 694.

The species is recognisable by its slender, weak, erect, sparingly branched, generally crowded stems, with constantly quaternate leaves and by its very few-flowered inflorescences arising from the upper leaf-whorls, rarely terminal.

The extension of the range of *A. subsimplex* to Victoria (extreme south-west) is interesting. Whether it is really worth distinguishing this form (*aquatica*) as we have done, can only be decided when further material is available. The luxuriant habit of the only specimen known to us (*Robertson 694*) is no doubt due to its growing in the water.

The principal interest of *A. subsimplex*, however, is its apparently close affinity with the New Zealand species, particularly with certain undescribed specimens which may possibly turn out to be *A. fragrantissima* J. B. Armstrong. These specimens have the quaternate leaves, weak (though not erect) stems, few-flowered subterminal inflorescences and short broadly infundibular corollas characteristic of *A. subsimplex*. The last-named has no obvious affinity with any other known Australian *Asperula*.

**7. *Asperula wimmerana* sp. nov.** *A. conferta* Benth. in sched., non Hook. fil.

*Herba* perennis. *Rhizoma* horizontale vel adscendens, tenue, 0.75 mm. diametro, atro-brunneum. *Caulēs* humiles, adscendentes, graciles, subsimplices, quadranguli, reflexo-asperi vel subhispidi, 3–11 cm. longi, c. 0.5 mm. diametro; internodiis plerumque 5–7 mm. longis. *Folia* sena, suberecta rarius patentia, interdum homomalla vel circum caulem spiraliter torquentia, subcartilaginea, anguste linearia, acuta, 3–5 mm. longa, 0.5 mm. lata, pagina inferiore subhispida, costa prominente, pagina superiore minus vestita, plana. *Inflorescentiae* terminales, 1–3 e verticillo summo orientes, subcapituliformes. *Flores* dioici: ♂ pro planta majusculi, cymas corymbosas hemisphaericas 7–8 mm. diametro efformantes; *receptaculum* minutum; *corollae* tubus infundibularis, 1.5–2.0 mm. longus, segmentis revoluto-patentibus, oblongis, acutis, brevissime incurvopidatis, trinerviis, tubo aequilongis vel paullo brevioribus, fere 1 mm. latis; *staminum* filamenta brevina, antherae oblongae, in siccitate conspicuae; *styli* fere obsoleti: ♀ minores; *receptaculum* subreniforme, c. 1 mm. lata; *corolla* c. 2 mm. longa, forma ♂ similis, tubo segmentis aequilonga; *stamina* minuta; *styli* exserti, late divaricati, stigmatibus capitatis conspicue reniformibus. *Fructus* brunneo-nigri, rugosi, glabri, 1.5–2.0 mm. diametro.

VICTORIA. ♂: Wimmera, 1900, *F. M. Reader* (type). ♀: Wimmera, N.D., *Dallachy*. ♂ & ♀: Murray River, no date or collector (? *F. v. Müller*).

forma (?) **glaberrima** f. nov. *A. scoparia* Benth. in sched., non Hook. fil.

*Caulibus*, *foliis pedunculisque* undique glaberrimis.

VICTORIA. ♀: near Melbourne, 7 Sept. 1856, *F. M. Adamson* 486.



A small, neat species with a rather distinct habit. In the dried state the suberect (typically hispid) leaves exhibit a tendency to a slight spiral twist round the stem, or are almost secund. The stems are quite slender, yet fairly rigid, as also are the leaves. The inflorescences are terminal, somewhat convex, and the flowers (at least the males) large for the size of the plant, with a long tube and reflexed segments to the corolla.

Our material is scanty—four sheets—and from Victorian localities only (though the Murray River specimen with a label in von Müller's handwriting *might* also be from South Australia or New South Wales). Like *A. subsimplex*, the present species stands somewhat isolated among the Australian *Asperulae*.

8. *Asperula lissocarpa* sp. nov. *A. conferta* Benth. Flor. Austr. iii. 444 (1866) p.p., non Hook. fil. ? *Rubia syrticola* Miquel in Ned. Kruidk. Arch. iv. 111 (1859).

*Herba* perennis. *Rhizoma* ignotum (nisi fragmentum ut videtur lignosum). *Caudex* tenuis, teres, subsimplex, elongatus, repens adscendens vel suberectus, paullatim sursum ampliatus, subrubescens, lignificatus, 8–13 cm. longus, cortice membranacea laxissime annexa. *Caules* erecti, ramosi, 5–12 cm. longi (caudice excluso), c. 1.0 mm. diametro, quadranguli, scabridi, ramis ad 6 cm. longis; internodiis c. 0.5–2.0 cm. longis. *Folia* sena, erecto-patentia, rigida, recta vel leviter curvata, linearia, apice abruptiuscule acuta, c. 3–7 mm. longa, 0.5–1.0 mm. lata, glabra, margine scabrido revoluta, costa infra prominente leve. *Inflorescentiae* terminales, numerosiores, ut videtur subpauciflorae. *Flores* dioici: ♂ *receptaculum* ignotum; *corollae* c. 2.5 mm. longae segmenta oblonga subacuta tubum subcylindricum subaequantia; *staminum* antherae oblongae filamenta breviter subaequantia; *stylus* ignotus: ♀ *receptaculum* ignotum; *corolla* forma ♂ similis, minor, segmentis reflexis; *stamina* obsoleta; *styli* alte connati, corollam longe superantes, stigmatibus subglobosis. *Fructus* conspicui, pallide brunnescentes, leves, mericarpiis subglobosis, 2.0–2.5 mm. diametro, corollam stylumque persistentem saepissime amplectentibus.

NEW SOUTH WALES. ♀: Darling River, N.D., Dallachy (type); *ibid.*, 1858, collector unknown (? Dallachy).

This species is only known to us from two sheets, very probably the same gathering, from the Darling River. It is unfortunate that no accurate data are available for the locality. Dallachy is known to have collected on the Darling River in the year 1858.

*A. lissocarpa* appears to be morphologically closer to *A. Cunninghamii* Shaw et Turrill than to any other Australian species. It may perhaps be regarded as forming a transition between § *Lignosae* and § *Confertae*. The specimens before us are characteristic by reason of the long, slender, leafless, unbranched lower portion of the stem, dark brown in colour and loosely sheathed by the membranous cortex. Above, the stem is pale, very scabrid and repeatedly branched. The leaves also are very scabrid and, in common with

the species of § *Lignosae*, are generally suberect. All our specimens but one are in fruit : this is unusual in being light brown in colour and quite smooth (though minutely pitted or areolate under the lens).

We suspect that it is this species which was described by F. A. G. Miquel in Nederl. Kruidk. Arch. iv. 111, 112 (1859) under the name of *Rubia syrticola* Miq. This is unlikely to have been a true *Rubia*, as this genus is not known to occur in Australia ; nor, in spite of its corolla being described as "rotata", is it likely to have been a *Galium*, since von Müller subsequently referred to this description as the place of publication of his *Asperula oligantha* [Fragm. Phyt. Austr. ix. 187 (1875)]. Specimens of *Asperula* are frequently written up *Galium* in herbaria, but we are unaware of instances of the opposite error. The points in Miquel's description which are particularly applicable to *A. lissocarpa* are the following (italics ours) : "Caulibus e rhizomate repente . . . erectis rigidis, . . . retrorse aculeolatis scaberrimis, foliis . . . erecto-patulis . . . rigidis, marginibus recurvis, subtus in nervo medio prominente marginibusque hispidis, fructu . . . succulento glabro . . . Tota planta exsiccatione (excepto fructu) pallescit . . . Mericarpia . . . siccitate . . . nitida." There seems to be no other species so well fitted by this description as *A. lissocarpa*. The matter cannot be finally settled until we have seen Miquel's type specimen, which he states was gathered "In interioribus Novae Hollandiae australis regionibus, ad Wallindango ; m. Oct. (Ferd. Müller)." "Wallindango" is no doubt the same as the present Woollundunga, a short distance east of Port Augusta, Frome County, South Australia. Dallachy probably collected his specimen near the south-west end of the Darling River : if so, the two localities are comparatively close (200-250 miles). "

In the event of this surmise proving correct, the name of the present species will have to be *Asperula syrticola* (Miquel), comb. nov.

Since writing the above, we have had the opportunity of examining one of Miquel's specimens\* of *Rubia syrticola* from the Utrecht Herbarium. Unfortunately this is merely two erect stems 12 and 14 cm. long respectively, arising from a common (? creeping) base, with a very few shrivelled black fruits among the upper leaves and no trace of a corolla. It is therefore impossible to decide from

\*Description of Miquel's specimen :

*Herba* perennis. *Rhizoma* repens, 1-2 mm. diametro, vix lignosum. *Caules* erecti, parum ramosi, 12-14 cm. longi, c. 1.0 mm. diametro, quadranguli, dense scabrido-pubescentes ; ramis ad 3 cm. longis ; internodiis ad 3 cm. longis. *Folia* sena vel octona, erecto-patentia, rigida, recta vel subflexuosa, lineari-subulata, apice (haud abrupte) acutissima, c. 4-8 mm. longa 0.5-1.0 mm. lata, margine revoluta costaque infra prominente setoso-scabrida. *Inflorescentiae* ignotae. *Fructus* pauci, axillares, nigri, glabri, mericarpiis globosis valde rugosis 1.5-2.0 mm. diametro.

Copy of label :

*Rubia Syrticola* Miq / n.sp. / *Asperula oligantha* β deserti / Mull. herb. / In interiorib. Nov. Holl. aust / ad Wallindunga, Oct. / Muller.

this material whether the specimen belongs to *Asperula* or not. All we can say is that it seems much nearer to *A. lissocarpa* nob. than to any other Australian species, and may quite possibly actually be that species. We are, however, not satisfied as to its identity from an examination of the vegetative parts and old fruits only. It is in some ways intermediate between *A. lissocarpa* and *A. Cunninghamii* nob., but certainly is not the latter species.

9. *Asperula Cunninghamii* sp. nov. *A. scoparia* Benth. Flor. Austr. iii. 444 (1866) p.p., non Hook. fil. *A. conferta* Benth. in sched. in Herb. Kew., non Hook. fil.

*Herba suffrutescens*, perennis. *Rhizoma* ignotum. *Caudex* pluriceps, erectus vel suberectus, crassus, valde lignificatus, 2–7 mm. diametro. *Caules annotini* persistentes, ramulis abruptis subsimplices, erecti, rigidi, lignosi, cortice fusco vel nigro evanescente teretes, ad 2 mm. diametro. *Caules hornotini* caespitosi, erecti vel adscendentes, robustiores, plerumque rigidissimi, stricte (rarius diffuse) ramosissimi, acute vel obtusiuscule quadranguli, raro subteretes, brevissime deflexo-tomentelli, 1.0–2.5 dm. longi, 0.5–1.5 mm. diametro; internodiis 0.5–3.0 cm. longis. *Folia* sena, stricte erecta, interdum paene cauli adpressa, rarius adscendentia vel patentia, rigida, linearia, subacuta vel subobtusa, infima in vaginam brevem membranaceam connata, 2–10 (plerumque c. 5) mm. longa, c. 0.5 mm. lata, margine revoluta costaque infra prominente pube brevissima vestita, pagina superiore glabra. *Inflorescentiae* terminales, pauciflorae, subcapituliformes. *Flores* dioici: ♂ *receptaculum* parvum, reniforme vel subglobosum; *corollae* c. 2–3 mm. longae segmenta oblonga trinervia subacuta interdum incurvo-cuspidata erecto-patentia tubo cylindrico subbreviora; *staminum* antherae oblongae filamenta breviter paullo excedentes; *stylus* nullus: ♀ minores; *receptaculum* subglobosum, fere 1 mm. diametro; *corollae* c. 1.0–1.5 mm. longae forma ♂ similis; *stamina* fere obsoleta; *styli* robustiores corollam aequantes vel superantes, stigmatibus majusculis capitatis reniformibus atro-rubentibus. *Fructus* hemisphaerice conglobati, atro-brunnei, c. 2 mm. diametro.

QUEENSLAND. ♂: [Mitchell, Maranoa Distr.], Sub-Tropical New Holland, [Aug.] 1846, *Lieut.-Col. Sir T. L. Mitchell* (incl. one ♀ spm.); Wyaga, Goondiwindi Distr., Sept. 1919, *C. T. White*; Mount Maria (sic; ? *sphalm. pro* Mt. Marra), Warrego, *F. M. Bailey*. ♀: St. George, Oct. 1893, *Jos. Wedd*?

NEW SOUTH WALES. ♂: Lachlan River, April 1817, *A. Cunningham* 47; "very abundant in open clear flats of Field's Plains, especially on spots recently inundated," [10] May 1817, *A. Cunningham* 46 (type); Narromine, June 1901, *J. L. Boorman*; Narrabri, Aug. 1907, *J. L. Boorman*. ♀: Narromine, Sept. 1898, *J. H. Maiden*; Dubbo, Aug. 1903 & Oct. 1906, *J. L. Boorman*; Bedooba, nr. Gulgannia, Jan. 1904, *W. Bauerlen*; Cobar, Aug. 1911, *L. Abrahams*.



INCERT. ♀: Interior of New Holland, 1838, *Major Mitchell's Expedition*.

Apparently not an uncommon species in Southern Queensland and New South Wales. It is strange that neither Hooker nor Bentham nor any subsequent author has ever described it as a distinct species, since it was collected as early as 1817 by Allan Cunningham, and also in 1838 and 1846 by Sir T. L. Mitchell. It is the commonest species of § *Lignosae*. The old woody stems of the previous year's growth either produce new shoots from their nodes, or else die and persist among the new growth from the stock. These old dead persistent stems are rather a feature of the species. We have observed occasional trimerous and pentamerous flowers.

10. ***Asperula subulifolia*** sq. nov. *Galium subulifolium* F. von Müll. in sched. in Herb. Kew. ? *A. scoparia* Benth. Flor. Austr. iii. 444 (1866) p.p., non Hook. fil.

*Herba suffrutescens*, perennis. *Rhizoma* ignotum. *Caudex* pluriceps, erectus vel adscendens, crassus, valde lignificatus, 2-3 mm. diametro; cortice striato vel fisso. *Caules annotini* adscendentes, rigidi, lignosi, teretes, ad 2 mm. diametro. *Caules hornotini* ex annotinis varie orientes, subcaespitosi, erecti vel adscendentes, rigidi, subdiffuse et angulariter ramosi, obtuse quadranguli vel subteretes, minutissime et densissime tomentelli, 1.0-2.5 dm. longi; internodiis 0.5-3.7 (plerumque 1.0-1.8) cm. longis. *Folia* sena, erecta vel erecto-patentia, subrigida, apicem versus flexuosa, anguste subulata, apice acutissima, basi vix vel brevissime connata, 2-8 mm. longa, costa robusta, lamina angustissima (vix ulla) deflexa, undique (ita ut caulis) tomentella, costa et margine superiore interdum glabrescentia. *Inflorescentiae* numerosae, terminales, eas *Bupleuri* spec. quarundam in siccitate aliquantulum revocantes, in verticillis foliorum supremis subsessiles, foliis flores aequantibus vel superantibus. *Flores* dioici: ♂ c. 3-8; *receptaculum* minutum; *corollae* 1.5-3.0 mm. longae lobi oblongi incurvo-cuspidati trinervi dorso brevissime setulosi tubum subcylindricum aequantes; *staminum* antherae filamenta aequantes vel superantes, oblongae, versatiles; *stylus* nullus: ♀ pauciores, 1-2; *receptaculum* (corolla jam cadente solum nobis cognitum) applanato-subglobosum, 1.3 mm. longum, 1.7 mm. latum; *corolla* forma ♂ similis, c. 1.5 mm. longa, lobis reflexo-patentibus; *stamina* minutissima; *styli* robusti, longiuscule connati, late divaricati, corollam longe superantes, stigmatibus obovato-oblongis, in stylum decurrentibus. *Fructus* (nisi immaturi—v. sub *receptaculo* supra) ignoti.

QUEENSLAND. ♂: Texas, Sept. 1910, J. L. Boorman (type).

NEW SOUTH WALES. ♂: Severn River, N.D., F. von Müller 172; New England, N.D., F. von Müller; nr. Tenterfield, C. Stuart. ♂ and ♀: Bingarra, Sept. 1907, J. L. Boorman.

Very closely allied to *A. Cunninghamii* Shaw et Turrill, but readily distinguished by the truly subulate, often flexuous leaves, of which

the greater part is formed by the broad midrib. The whole plant (except the flowers and fruit) is covered by an exceedingly fine and dense tomentellum, very much finer than the indumentum of *A. Cunninghamii*.

11. *Asperula ambleia* sp. nov. *A. conferta* Hook. fil., var. *elongata* F. M. Bailey Queensl. Flor. iii. 783 (1900), non Benth.

*Herba suffrutescens*, perennis. *Rhizoma* ignotum. *Caudex* (quatenus cognitus) crassus, valde lignificatus, 3-4 mm. diametro. *Caules annotini* adscendentes vel erecti, rigidi, lignosi, teretes, 1-2 mm. diametro, corticis angulis cartilagineis laxis persistentibus. *Caules hornotini* e nodis annotinorum singuli vel bini, subfastigiati, rigidi, ramosi, obtuse quadranguli vel subteretes, minutissime tomentelli rarius glabrescentes, 0.5-3.0 dm. longi, 0.3-1.2 mm. diametro; internodiis 0.3-1.4 cm. longis. *Folia* bina, decussata, erecta, interdum cauli arcte adpressa, rarius patentiora, rigida, cartilaginea, recta, lineari-subulata, 2-4 mm. longa, interdum 7 mm. raro 10 mm. attingentia, c. 0.3 (rarissime ad 1.0) mm. lata, apice obtusissima vel rotundata, costa robusta, laminae angustissimae margine deflexo, undique sparse tomentella vel glaberrima. *Stipulae interpetiolares* binae, basi foliis breviter connatae, forma foliis similes sed subduplo breviores. *Inflorescentiae* terminales, pauciflorae. *Flores* dioici: ♂ *receptaculum* minutum; *corollae* c. 2.3 mm. longae lobi anguste oblongi subacuti reflexo-patentes tubum cylindricum aequantes; *staminum* filamenta gracilia antheras lineari-oblongas subaequantia; *stylus* obsoletus; ♀ *receptaculum* reniforme c. 1 mm. latum; *corollae* c. 1.2 mm. longae lobi ovato-oblongi subobtusiusculi tubum breviter infundibularem paullo superantes; *stamina* fere obsoleta; *styli* robustiores altius connati corollam superantes, stigmatibus capitatis subglobosis. *Fructus* (vix maturi) nigri, subreniformes, c. 1.2 mm. longi, 2.0 mm. lati.

QUEENSLAND. ♂: Morven, Dec. 1890, *F. M. Bailey*; Stanthorpe, Nov. 1890, *F. M. Bailey*; *ibid.*, Nov. 1904, *J. L. Boorman* (type); *ibid.*, N.D., *J. Davidson*. ♀: Stanthorpe, N.D., *J. Davidson*.  
NEW SOUTH WALES. ♂: Shoalhaven [River], *W. Woolls*.

Evidently near to the last two species, but quite distinct in having quaternate, not senate leaves, which are unequal in length, *i.e.* the interpetiolar stipules are here morphologically distinguishable from the true leaves. These organs are remarkably blunt, as though their tips had been worn off. They are cartilaginous in texture and shortly connate at the base. Though the general leaf-measurement is in the region of 3-5 mm. long, Bailey's specimen from Stanthorpe shows leaves 1 cm. in length. Our material is at present inadequate. It is remarkable that four out of the six specimens we have seen should all be from the same locality (Stanthorpe, Queensland, about 100 miles S.W. of Brisbane, close to the N.S.W. border). Of the remaining specimens one is from Morven, 350 miles N.W. in central Queensland, and the other from Shoalhaven, a river about 75 miles S.W. of Sydney, N.S.W.

12. *Asperula euryphylla* sp. nov. *A. Gunnii* Benth. Flor. Austr. iii. 445 (1866) p.p.?, non Hook. fil.

*Herba* perennis. *Radix* ignota. *Caules* adscendentes vel subscandentes, 2–3 dm. longi vel ultra, c. 1.0 mm. diametro, ramosi, quadranguli, ad angulos setulis minutissimis reflexis aspero-puberuli. *Folia* sena, patentia, obovata, subobtusata raro acuta, basi attenuata, 5–12 mm. longa, ad 5 mm. lata, pagina superiore marginem scabridulum reflexum versus hispidula, pagina inferiore glabra, costa media prominente setulis reflexis scabrida; internodiis 2–5 cm. longis. *Inflorescentia* cymosa, subramosa, terminalis. *Flores* dioici: ♂ 3–7 ad ramulos ultimos inflorescentiae subcapituliforme dispositi, pedicellis brevissimis; *receptaculum* parvum, semiglobosum; *corolla* infundibularis, tubo c. 1.5 mm. longo, segmentis patentibus, deltoideo-oblongis, c. 1.5 mm. longis, 1.0 mm. latis, acutis haud cuspidatis; *staminum* filamenta brevissima antheris ellipticis aequilonga; *styli* obsoleti: ♀ et *fructus* ignoti.

VICTORIA. ♂: Dandenong Ranges, 1893, *C. Walter* (type); Dandenong, without collector's name or date (ex Nat. Herb. Vict., Melb., no. 28); Lilydale, Nov. 1885, *A. H. Lucas*.

var. *tetraphylla* var. nov.

*Folia* quaterna late elliptico-obovata, 7–8 mm. longa 4–5 mm. lata.

SOUTH AUSTRALIA. ♂: Kangaroo Island, 1886, *Otto Tepper*.

var. *octophylla* var. nov.

*Folia* octona, oblonga vel suboblanceolata, 1–2 mm. lata, ad 9 mm. longa.

? VICTORIA. ♂: no loc., date or collector's name, ex Nat. Herb. Vict., Melb., no. 10, in Herb. Kew.

This species includes specimens with broader leaves than any others known from Australia. The number of leaves at a node ranges from four to eight; the breadth varies inversely as the number. The variety *octophylla*—unfortunately represented at present by a solitary specimen in Herb. Kew. from the National Herbarium of Victoria, Melbourne, without data of any kind—shows a very close approach to *A. Gunnii* Hook. fil. *A. euryphylla*, however, apparently always dries a light green, whereas *A. Gunnii* dries some shade of brown, generally very dark, indicating some biochemical difference between the two. Moreover we have seen no specimen of *A. Gunnii* with more than 6 leaves in a whorl.

13. *Asperula asthenes* sp. nov.

*Herba* perennis. *Radix* ignota. *Caules* subsimplices vel parte inferiore parvisse ramosi, graciles, flaccidi, subscandentes, 2–3 dm. longi (vel ultra?), vix 1 mm. diametro, quadranguli, laeves praeter angulos minutissime sparseque asperulos; internodiis 4–7 cm. longis. *Folia* bina, patentia, lineari- vel elliptico-oblanceolata, 1.5–2.0 cm. longa, 2–4 mm. lata, vel obtusa submucronata



vel subacuta, in petiolum c. 3 mm. longum sensim attenuata; pagina superiore et margine revoluta asperulis minutissimis sparsis obsita; pagina inferiore glaberrima, costa scabridula; nervi reticulati. *Stipulae interpetiolares* binae, forma foliis subsimiles longitudinis tamen tertiam partem vel duas partes solum attingentes. *Inflorescentia* terminalis, parce ramosa, cymosa. *Flores* dioici: ♂ diffusius dispositi, pedunculis pedicellisque evolutioribus gracilibus: *receptaculum* minutum; *corollae* tubo latiuscule infundibulari, 1 mm. longo, segmentis patentibus deltoideis subacutis trinerviis; *staminum* filamenta brevissima, antherae oblongae; *stylus* brevissimus simplex: ♀ subcapituliforme dispositi, pedunculis 1-7 mm. longis, pedicellis fere obsoletis; *receptaculum* subglobosum, laeve; *corolla* minuta 1 mm. longa, tubo cylindrico segmenta erecto-potentia obtusa aequante; *stamina* obsolescentia. *Fructus* ignoti.

NEW SOUTH WALES. ♂: Wakivory Creek, Sept. 1897, J. H. Maiden. ♀: Bulladelah, Oct. 1923, Rev. H. M. R. Rupp (type).

*A. asthenes* is, as its name indicates, characterized by a weak stem with elongated internodes. The inequality in size of the leaves of each whorl is noticeable.

14. ***Asperula Charophyton*** sp. nov. *A. conferta* Hook. fil., var. *elongata* Benth. Flor. Austr. iii. 444 (1866); non F. M. Bailey Queensl. Flor. iii. 783 (1900).

*Herba* perennis, in siccitate plantam *Characeam* habitu revocans. *Radix* ignota. *Caules* suberecti, flexuosi vel substricti, 2-3 dm. longi, c. 1.0-1.5 mm. diametro, quadranguli, glabri vel minutissime aspero-puberuli; internodiis 2-7 cm. longis. *Folia* sena, lineari-loriformia, obtusa vel subacuta, 0.5-2.7 cm. longa, ad 1.5 mm. lata, basin versus sensim attenuata, flaccida, potentia vel erecto-potentia interdum recurva, utrinque glabra, margine plerumque revoluta rarius subplana. *Inflorescentiae* cymuli saepissime tres terminales subcapituliformes 2-6-flori e verticillo supremo cujusque ramuli orientes; cymulorum pedunculis 0.9-1.7 cm. longis, gracilibus, glabris vel minutissime puberulis. *Flores* dioici: ♂ pauci pedunculis gracilibus suffulti; *receptaculum* minutum; *corollae* tubus cylindricus 1 mm. longus, segmentis angustius oblongis apice inflexo-cuspidatis patentibus 1 mm. longis; *staminum* filamenta brevissima gracillima, antheris oblongis caducis; *stylus* obsoletus: ♀ confertiores, pedunculis brevioribus suffulti; *receptaculum* globosum; *corollae* perpaucae c. 1.0 mm. longae tubus brevissimus cylindricus ima basi constrictus segmentis suberectis apice inflexo-cuspidatis; *stamina* obsolescentia; *styli* recurvati corollam paullo superantes, stigmatibus globosis. *Fructus* brevissime stipitati, globosi, ut videtur raro didymi, atro-brunnescentes, 2-3 mm. diametro.

QUEENSLAND. ♂: Herbert's Creek, N.D., E. M. Bowman; Mackenzie River and Suttor River, N.D., F. von Müller (type).

NEW SOUTH WALES. ♂: Richmond, *R. Brown* [Iter Austr. 1802-5] 3497; ponds, Richmond, 1803, *R. Brown* [B.M.]; New England, N.D., *C. Stuart*. ♀: in a creek at Dovedale, 31 Nov. [*sic*!] 1807, *G. Caley* [B.M.]; nr. Tenterfield, N.D., *C. Stuart*; New England, without date or collector, 2 sheets in Herb. Kew. (ex Nat. Herb. Vict., Melbourne).

TASMANIA. ♂: River Severn, without date or collector, in Herb. Kew. (ex Nat. Herb. Vict., Melb.).

The general habit of this species, at any rate in the dried state, is strongly reminiscent of that of a Charophyte. The relatively long strap-shaped leaves are fairly constantly six at a node, the whorls being separated by internodes of rather varying lengths. We have so far seen no specimens from Victoria, but it is probable that the species occurs there as it is found in both New South Wales and Tasmania.

15. *Asperula gemella* sp. nov. *Galium geminifolium* F. von Müll. in Trans. Vict. Inst. [i.] 127 (1855); in Hook. Kew Journ. viii. 146 (1856); Plant. Vict. t.xxxi (1864-65). Miq. in Nederl. Kruidk. Arch. iv. 113 (1859). Benth. Flor. Austr. iii. 445 (1866). *Asperula geminifolia* F. von Müll. Key Syst. Vict. Pl. ii. fig. 75 (1885) (*non descr.*); *non* Fragm. Phytogr. Austr. v. 147 (1865-66).

*Herba* perennis. *Radix* (vel *caudex*) crassa, lignosa, 2-4 mm. diametro. *Caules* plurimi, gracillimi, flaccidi, ramosi plerumque dichotomi, decumbentes scandentes vel suberecti, quadranguli, glaberrimi, 2-6 dm. longi, 0.5-1.0 mm. diametro, basi lignescente repente in exemplari ♀ rubro-tincto vel potius -tingente; internodiis 2-8 cm. longis. *Folia* bina opposita, patentia vel reflexa, flaccida, anguste linearia, subacuta, basi subconnata, c. 5-15 mm. longa, 0.5-1.0 mm. lata, utrinque glabra, margine revoluta. *Stipulae interpetiolares* binae, lineares, foliis consimiles sed minores, c. 2-7 mm. longae vel ad dentes triangulares redactae vel omnino obsoletae. *Inflorescentiae* terminales et axillares, dichotomae, ramulis saepissime valde divaricatis, ultimis tenuissimis. *Flores* dioici, diffusi: ♂ pedicellis subcapillaceis breviusculis suffulti; *receptaculum* minutissimum; *corolla* infundibularis, tubo brevissimo, segmentis lineari-oblongis acutis patentibus c. 1.0 mm. longis, trinerviis, nervis lateralibus paene marginalibus; *staminum* filamenta tenuissima longiuscula, antheris parvis oblongis; *stylus* nullus: ♀ minuti, pedicellis quam in ♂ paullo robustioribus; *receptaculum* minutum (c. 0.5-1.0 mm. diam.) complanato-globosum; *corolla* primo cylindro-campanulata, deinde subrotata, c. 1.0-1.5 mm. longa, tubo brevissimo fere obsoleto, segmentis lineari-oblongis inflexo-cuspidatis acutis; *stamina* minutissima vel obsoleta; *stylus* breviter bifidus, corollam aequans vel paullo superans, stigmatibus majusculis ovato-globosis. *Fructus* mericarpia globosa, rugosa, nigra, 2-3 mm. diametro.

NEW SOUTH WALES. ♂: Lachlan River, 1828, *F. von Müller*; Warrego River, Sept. 1885, *E. Bêche*. ♂ and ♀: Darling River, N.D., *Victorian Expedition*.

VICTORIA. ♀: ad flumina Murray et Avoca, N.D., *F. von Müller* (type); Avoca, N.D., *F. von Müller*.

SOUTH AUSTRALIA. ♂: [not localised: ?Port Lincoln], N.D., *Carl Wilhelmi*.

The numerous stems of this species are by far the most conspicuous part of the plant.

It is separated from *A. geminifolia* F. von Müll., the only other Australian species with leaves in pairs, by the remarkably short corolla tube in the male flowers (as well as in the females). This fact led von Müller to describe this plant as a species of *Galium* under the name of *G. geminifolium* F. von Müll. Unfortunately this trivial cannot be retained owing to the existence already of the combination *A. geminifolia* which was attached to the above-mentioned distinct species by von Müller himself. The trivial *gemella* has been chosen as reminiscent of von Müller's trivial, and also as indicating the great resemblance between the two species.

The species is further distinguished from *A. geminifolium* by the remarkably divaricate branching of the stem and especially of the inflorescence, and also by the frequent development of the interpetiolar stipules. We have at present no record of *A. gemella* from Queensland, to which State *A. geminifolia* appears to be confined.

16. ***Asperula geminifolia*** *F. von Müll.* Fragm. Phytogr. Austr. v. 147 (1865-66); Key Syst. Vict. Pl. i. 291 (1887-88), *non fig.* Benth. Flor. Austr. iii. 443 (1886). *F. M. Bailey*, Queensl. Flor. iii. 782 (1900).

*Herba* perennis. *Rhizoma* ignotum. *Caudex* lignosus, c. 2 mm. diametro. *Caules* elongatissimi, subscandentes, flaccidi, tenues, parce ramosi, ad 7 dm. longi, c. 0.5 (numquam 1.0) mm. diametro, quadranguli, glaberrimi vel ad angulos sparse minute scaberuli; internodiis c. 5-12 cm. longis. *Folia* bina, patentia vel reflexa, rarius suberecta, flaccida, linearia vel lanceolato-linearia, acuta vel subobtusata, basi sensim attenuata, 0.5-3.0 cm. longa, 1-2 mm. lata, interdum ad 4.5 cm. longa, 4 mm. lata, glaberrima, raro costa marginibusque sparse scaberula, margine plana vel revoluta. *Stipulae interpetiolares* binae, minutae, dentiformes vel ad annulum foliorum bases conjungentem redactae. *Inflorescentiae* paucae, terminales, subcapituliformes, c. 6-florae, solitariae vel 2-3 umbellatae. *Flores* dioici, subsessiles: ♂ *receptaculum* minutum, didy-mum; *corollae* elongate infundibularis ad 3.5 mm. longae segmenta ovato-oblonga acuta subcallosa tubo duplo vel triplo breviora; *staminum* filamenta brevissima, antherae parvae anguste oblongae; *stylus* nullus; ♀ *receptaculum* subglobosum, c. 1 mm. latum; *corollae* c. 1.0-1.5 mm. longae tubus cylindricus segmentis callosis suberectis paullo longior vel subaequilongus; *stamina* minutissima;



*styli* subrobusti, alte connati, corollam superantes, stigmatibus globosis. *Fructus* (?vix maturi) brunnescentes, rugosi, mericarpiis subglobosis, c. 1.5 mm. diametro.

QUEENSLAND. ♂: Indooroopilly, nr. Brisbane, 1908, *C. T. White*; "Southern Queensland", N.D., *F. M. Bailey* (incl. small fruiting branch). ♀: Brisbane River, New South Wales (*sic*!), Sept. 1828, *A. Cunningham* 153; on alluvial ground on the banks of the Brisbane River and Creeks falling into it, 1828, *A. Cunningham*; Burdekin [Riv.], N.D., *Dr. Müller*; "Queensland" & Connor's River, N.D., *Bowman*; prope Brisbane River, Australiae or., 1863-1865, *Amalia Dietrich* (ex mus. Godeff. Hamb.); Ipswich, 1909, *T. F. Hall*. Sex indet.: Wash Pool, Blackall, N.D., *R. A. Ranking*.

We have not seen an actual type specimen of this species. It appears to be confined to Queensland.

The interpetiolar stipules are never more than minute teeth and are frequently quite obsolete. The branching is much less conspicuously divaricate than that of *A. gemella*, the leaves are on the whole broader, and the tube of the male corollas is elongate-funnel-shaped.

**\**Asperula arvensis* Linn. Sp. Pl. 103 (1753).** Boiss. Flor. Or. iii. 30 (1875).

NEW SOUTH WALES. Penshurst [nr. Sydney], Oct. 1909, *E. Cheel*.

Alien. Widely distributed and common in the Mediterranean Region from France, Spain and North Africa to Caucasia and Persia.

List of Identifications of Collectors' Numbers Quoted from Herb. Kew.

Adamson, F. M. 157 Melbourne, 9 Oct. 1853, *conferta*: 486 nr. Melbourne, 7 Sept. 1856, *wimmerana*, forma *glaberrima*.

Bauerlen, W. 548 Tingiring Mts., 1887, *pusilla*.

Brown, R. 3488 Derwent Riv. (Iter Austr., 1802-5), *subsimplex*: 3497 Richmond (Iter Austr., 1802-5), *Charophyton*.

Cabbage, R. H. 2223 Hunter R., Lochinvar, 24 Aug. 1909, *conferta*: 3017 Booroomba, Queanbeyan, 6 Nov. 1911, *scoparia*: 3302 Mt. Bimberi, Queanbeyan, 15 Jan. 1912, *Gunnii*.

Cunningham, A. 46 Field's Plains, May 1817, *Cunninghamii*: 47 Lachlan R., Apr. 1817, *Cunninghamii*: 86 Bathurst, Oct. 1822, *conferta*: 153 Brisbane R., "New South Wales", Sept. 1828, *geminifolia*.

Gunn, R. 159 no loc., 1835, *conferta*: 159 Launceston, 14 Oct. 1843, *conferta*: 407 no loc., 1835, *subsimplex*: 407 Circular Head, 25 Dec. 1837, *subsimplex* (type): 407 no loc., 1844, *subsimplex*: 407 Lake St. Clair, 13 Feb. 1845, *subsimplex*: 407 no loc. or date, *subsimplex*: 557 Hampshire Hills, Feb. 1837, *pusilla*: 557 St. Patrick's Riv., 16 Nov. 1844, *pusilla*: 557 no loc., 1844, *pusilla*: 557 Arthur's Lakes, 17 Jan. 1845, *pusilla*: 557 Hampshire Hills & Woolnorth, N.D., *pusilla*: 882 no loc. or date, *subsimplex*: 890 Woolnorth, 16 Oct. 1836 & 21 Sept. 1837,

*conferta*, var.? *abbreviata*: 891 Hampshire Hills, Feb. 1837, *pusilla* (type): 891 no loc. or date, *pusilla*: 892 Hampshire Hills, 1837, *Gunnii*, var. *curta*: 1123 Mt. Wellington, 31 Jan. 1840, *Gunnii*: (J. D. Hooker) 1123 Marlborough, 17 Oct. 1840, *Gunnii*: 1123 no loc., 1844, *Gunnii*: 1123 Arthur's Lakes, 17 Jan. 1845, *Gunnii*: 1124 Glen Leith, 14 Oct. 1840, *scoparia*: (M.B.) 1124 New Norfolk, 6 & 18 Nov. 1840, *scoparia*: 1125 Clarence Plains, 12 Oct. 1840, *conferta*, var.? *scoparioides*: 1251 Georgetown, 21 Nov. 1842, 9 Jan. 1843 & 1844, *minima*: "1251 or 557" Pt. Effingham, 3 Dec. 1841, *minima*.  
 Hooker, J. D. 1007 Lawrenny, N.D., *scoparia*: 1010 no loc. or date, *pusilla*: 1012 New Norfolk, N.D., *conferta*, var.? *scoparioides*.  
 Kendall, R. J. 76 Castlemaine, 15 Sept. 1860, *conferta*.  
 Lawrence. "9 & 115," no loc. or date, *conferta*: 115 no loc., 1831, *conferta* (lectotype): 242 Formosa, N.D., *subsimplex*: 326 Western Mountains, N.D., *scoparia*: 329 no loc. or date, *pusilla*.  
 Mitchell, T. L. 515 Camp 29, Aug. 1846, *conferta*, var.? *scoparioides*.  
 Mossman, S. 443 Port Philip, N.D., *conferta*, var.? *scoparioides*.  
 Müller, F. von. 172 Severn R., N.D., *subulifolia*.  
 Robertson. 694 Wendee (or Wando) R., 1 Dec. (or 12 Jan.) 1844, *subsimplex*, f.? *aquatica*.  
 White, C. T. 1747 Silverwood, Aug. 1922, *conferta*.

## XVI.—AMOMUM MURICATUM. C. E. C. FISCHER.

In his monograph of the *Zingiberaceae* in *Das Pflanzenreich*, iv.: 46 (1904), K. Schumann described, on p. 256, a new species of *Amomum* under the name *A. Holmesii* and gave its locality as "Vorder-Indien: West Küste, in den Anamallay-Hügeln (Beddome)." Further, he stated that he found the specimens at the herbarium of the Pharmaceutical Society in London under the name of *Amomum cannaecarpum*, with which species its large appendaged connective did not agree.

By the courtesy of the Curator of the Pharmaceutical Society, Mr. T. E. Wallis, I have been able to examine the *Amomums* represented in the herbarium in question and did not find any specimens identified as *A. Holmesii* K. Schum. There are, however, three sheets of plants collected by Beddome in the Anamallay Hills which are inscribed in, apparently, Daniel Hanbury's handwriting as follows: 1, *Amomum aculeatum* Roxb. 2, *Elettaria cannaecarpa* Wight. 3, *Am. muricatum* Bedd. Mss.

There is also some material in spirit (spikes with flowers and fruit) of the same collection.

It is known that Beddome sent material of the *Amomums* and allies to D. Hanbury, who was making a special study of those genera.

The three sheets mentioned also bear a label printed with the words "Bearbeitet für das Pflanzenreich," inscribed and initialed in Schumann's own writing as identified by him as *Amomum muricatum* Bedd.

The specimens of the Zingiberaceae in this herbarium were lent to Schumann for the preparation of his monograph.

It seems evident, therefore, that at some time Schumann had considered the three sheets mentioned to be Beddome's *A. muricatum* as described in the Madras Journal in 1864. Nevertheless, on page 238 of the monograph he has placed *A. muricatum* Bedd. among the "Species incertae sedis," merely quoting the Madras Journal but giving no description.

Beddome's description in the Madras Journ. Lit. and Sci. Ser. 3, vol. I, p. 59 (1864), is as follows:—

"*Amomum muricatum* (R.N.B.). 3-5 feet high, leaves broad-lanceolate, almost sessile from the apex of their sheaths which end in an entire ligula, and are furnished with a knob-like gland at the base of the very short petiole; leaves deep green shining, glabrous on both sides, 12 inches long 4 inches broad, spikes (at first appearing as a globular head) short-peduncled, radical, lower bracts small, pink, embracing the peduncle, upper ones crumpled, turning brown before the flowers expand, calyx double, the outer one tubular, shorter than the inner, 2 cleft at apex, inner one 3 cleft; exterior segments of corolla white to yellowish, lateral ones narrow, superior broad-ovate, not ending in a horn, lip deeply 3 parted, lower lobe protruded and emarginate, 2 spurred at the base, yellow with a broad streak of red spots, filament longish broad more than twice the length of the anther, anther-crest semilunar, very large, entire, yellow; scales of the germ 2 short and thick, the stigma rising up between them; capsule globular pink-coloured, size of a greengage, concave at the top, beset with numerous stout prickles. An animalais: moist forests, 2000 to 3000 feet."

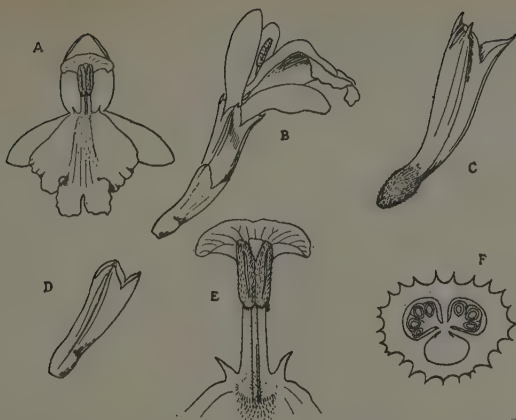
This description agrees very well with the specimens, which differ slightly in the following respects: i. The leaves show a few rare hairs. ii. The leaves attain 16 inches in length. iii. The ligules occasionally are more or less 2-lobed and the knob-like gland on the petiole is not traceable. iv. The floral bract is either 2- or 3-lobed.

It is precisely in these same points that Schumann's description of *A. Holmesii* differs from the description of *A. muricatum* given above, though in addition there are other features mentioned by Schumann or Beddome on which the other is silent.

These considerations have led me to the conclusion that the two species are identical, and this being the case the older name must prevail for the species, namely *Amomum muricatum* Bedd. I am unable to suggest, however, how the confusion arose.

The accompanying figures are reproduced from drawings (by Beddome or D. Hanbury) attached to one of the sheets.





*Amomum muricatum* Bedd. A & B. whole flower, nat. size; C. calyx and ovary  $\times 1\frac{1}{2}$ ; D. bract  $\times 2$ ; E. base of lip and stamen  $\times 2\frac{1}{2}$ ; F. section across fruit  $\times \frac{3}{4}$ .

## XVII.—NEW SPECIES FROM THE ANDES OF ARGENTINA: II.\* N. Y. SANDWITH.

Mr. H. F. Comber's second expedition to the Andes covered an area lying considerably to the south of the ground which he had previously explored in the Territory of Neuquen. He took as his base the small town of San Martin de los Andes, which is situated at  $40^{\circ}$  S. at a height of about 2500 ft. on one of the numerous lakes running east and west on the eastern side of the frontier of Chile and Argentina. Leaving San Martin in November, 1926, Mr. Comber travelled north to Lago Lolog and Lago Huechulafquen, near which he crossed the frontier at 6000 ft. into the Chilean province of Valdivia and descended westwards to Lago Villarica. From here he turned south to the lakes of Calafquen, Neltume and Pirehuaico, recrossed the frontier and returned to San Martin in February, 1927. Almost immediately afterwards this circular itinerary was repeated, with considerable variations on the Chilean side. Mr. Comber also employed a native collector in the Zapala district, and many of the previous year's interesting plants were again found, including *Calceolaria poikilanthos*, which is locally abundant.

As with the first collection, only those specimens which are represented by seed numbers have been so far identified, and amongst these a few additional new species—all from Argentina—have been discovered. The descriptions of these new species are given below. A short paper on the species of *Viola* is being prepared by

\*Continued from *K.B.* 1927, p. 188.

Dr. W. Becker. It is probable that the number of new species collected by Mr. Comber will be greatly increased when the whole of his collections has been worked out ; but it is often difficult to assign definite and permanent names with any confidence, except in cases where the plants from this area are already represented at Kew by authentic material. At present the tendency in naming such plants is to attempt to match them with descriptions, allowing a considerable latitude for variation in characters the taxonomic value of which is uncertain. This course seems to be the least unsatisfactory. Many of Philippi's multitudinous types of Chilean species can be examined only at Santiago, whilst those of Argentina are scattered over the great herbaria of both hemispheres ; and the over-hasty description of " new species " after so many expeditions to Argentina has led to confusion which is only too familiar to anyone who has worked on the flora of that country. It is not possible for botanists in either hemisphere to name collections from this area with any degree of accuracy and finality without paying lengthy visits to herbaria in other parts of the world.

**Berberis lologensis** *Sandwith* (*B. Darwinii* Hook. x *linearifolia* Phil.) hybr. nov. [Berberidaceae] ; inter parentes crescens ac optime intermedia, *B. Darwinii* ramulis dense pilosulis, spinis ramulorum saepe 4-5-fidis, foliis plerisque spinoso-dentatis, inflorescentiis saepe racemosis ; *B. linearifoliae* forma foliorum fructusque, inflorescentia pauciflora laxa proxima.

*Ramuli* annotini *B. Darwinii* sed minus teretes, parcius breviusque pilosuli. *Spinæ* ramulorum 3-5-fidae, parte inferiore pilosulae, ad 7 mm. longae. *Folia* ramulorum hornotinorum obtriangularia vel rhomboideo-elliptica, fortiter irregulariter spinoso-dentata dentibus 3-6, aut linearia integra unove dente praedita, 2-4 cm. longa, cum dentibus 0.5-1.4 cm. lata. *Inflorescentia* nunc racemosa nunc umbelliformis nonnunquam etiam pedicello solitario e perula simul atque racemo surgente, pauciflora 3-4-flora ; bracteae ad 3.5 mm. longae ; pedicelli 0.5-1.5 (vulgo circiter 1.2) cm. longi. *Flores* delapsi. *Fructus* ovoideus, saepius utrinque attenuatus, 7-9 mm. longus, ad 6 mm. diametro ; stylus cum stigmate 3-3.5 mm. longus.

ARGENTINA. Lago Lolog, 40° S., February 20th, 1927, *Comber* 1061. " Three plants found growing with the other two species. Habit intermediate."

**Menonvillea Comberi** *Sandwith*, sp. nov. [Cruciferae-Lepidinae] ; *M. patagonicae* Speg. forsan affinis, omnibus partibus multo majoribus praesertim pedicellis multo longioribus, floribus multo majoribus petalis sepala longe superantibus, siliquis majoribus pubescentibus optime differt.

*Herba* annua viridis hispida, radice deorsum ramoso-fibrosa apicem versus simplici crassiore circiter 3 mm. diametro, foliis radicalibus rosulatis coronata ; caulis basi divaricate ramosus,

ramis 5–10 cm. longis, 1–1.5 mm. diametro axem centralem robustiorem ad 3.5 mm. diametro fere aequantibus vel etiam nonnunquam longe superantibus; rami omnes pilis albis tenuibus patentibus hirsuti. *Folia* radicalia dense conferta et persistentia, obovato-spathulata vel oblanceolata, versus apicem fortiter dentata vel fere pinnatifida, dentibus 2–3-jugis 1–5 mm. longis basi 2–4 mm. latis acutis dente terminali vulgo rotundato atque paulo latiore excepto, tum paulatim in petiolum laminiformem decrescentia, 1.5–4.5 cm. longa, apicem versus cum dentibus 0.6–1.4 cm. lata, mollia, utrinque ut caules hispida; folia caulina alterna saepe arcuato-falcata, radicalibus similia sed minora angustiora minus spathulata, ad 1.8 cm. longa, apice cum dentibus ad 0.6 cm. lata, dimidio superiore pinnatifida dentibus 1–3-jugis acutioribus saepe oppositis parallelisque 1–2 mm. longis. *Inflorescentiae* ramos terminantes dense corymboso-racemosae, 2–3.5 cm. diametro, fructiferae et praesertim ea axis centralis elongatae, floribus imis ex axillis foliorum superiorum surgentibus, ceteris ebracteatis; pedicelli 0.5–1.5 cm. longi, ut axis dense hirsuti. *Sepala* ovata obtusa, extra satis parce hispida, intus glabra, marginibus hyalinis, 3.5–4.5 mm. longa, ad 2.5 mm. lata. *Petala* magna alba spathulata unguiculata, 6.5–7.5 mm. longa, lamina 4–4.5 mm. lata. *Stamina* glabra cum antheris 3–4 mm. longa. *Ovarium* glabrum valvis scutatis 1.5 mm. longis atque latis; stylus crassus, cum stigmate ad 1.75 mm. longus, ad 1.2 mm. latus. *Fructus* distincte parce pubescens; valvae orbitales 4–5 mm. longae, 4–4.5 mm. latae, dorso cum nervo medio distincto venisque radiantibus, marginibus alarum hyalinis 0.5 mm. latis; stylus cum stigmate 2 mm. longus.

ARGENTINA. Sierra Mamuil Malal, 40° S., 1650 m., December 29th, 1926, *Comber* 914. "Annual, growing in loose sandy soil in open places. Flowers pure white, sweet-scented. Leaves soft, greenish or reddish."

***Oxalis Comberi* R. Knuth**, sp. nov. [Oxalidaceae]; *caudex* usque 15 cm. profundus, cortice brunneo obtectus, inferne 7 mm. crassus, repetite furcatus, superne caespitoso-ramosus, caespitem satis densum 10 cm. diametro efformans; ramuli reliquiis petiolorum emarcidis brunneis 6 mm. longis dense vestiti. *Folia* versus apices ramulorum dense congesta; petioli 1.5 cm. longi, 0.5–0.75 mm. crassi, pilis appressis obsiti; foliola 3 subsimilia, 3–4 mm. longa, 3 mm. lata, obtriquetro-cordata, antice usque ad quartam partem obcordato-incisa, lobulis rotundatis, breviter pilosa, margine anteriore carmineo-pustulata. *Flores* folia parum excedentes; pedunculi 2 cm. longi, 1–2-flori, pedicellis circiter 5 mm. longis, indumento aequali sicut petioli vestiti et eis aequicrassi. *Sepala* oblonga, pilosula, obtusa, exsiccata 4 mm. longa. *Corolla* usque ad tertiam partem inferiorem vel ad medium tubulosa, deinde late dilatata; petala e basi cuneata dilatata, exsiccata 1 cm. longa, antice plus minusve retusa, lutea, ad venas intense purpureo-notata. *Stamina* stylisque dense puberula.



ARGENTINA. Chapelco Valley, 40° S., 660 m., December 15th, 1926, *Comber* 866 (type in Herb. Kew.). "Perennial, growing in sandy soil in full sun. Leaves dark green. Flowers yellow inside, lined with red outside. Makes patches twelve inches across. Common also in Cohunco."

This specimen was kindly examined by Dr. R. Knuth, who provided the above description. The affinity is with *O. erythrorrhiza* Gill.

**Valeriana chionophila** *Sandwith*, sp. nov. [Valerianaceae]; incertae sedis, *V. Foncki* Phil., *V. carnosae* Sm. vel *V. radicali* Clos forsan affinis, habitu radice insigni bracteis floribusque toto caelo differre videtur.

*Herba* perennis humilis glaberrima, more generis dioica, radice crassissima 1.2–2 cm. diametro foliis longe petiolatis scapisque floriferis folia paulo superantibus coronata. *Folia* radicalia petiolis purpurascensibus 4–5 cm. longis ad 2 mm. diametro suffulta, late ovata vel triangulari-ovata, apice obtusa, basi cuneata vel late obtusa fere truncata numquam cordata, 1.5–2 cm. longa, 1.2–2 cm. lata, laete viridia, carnosa, saepius per costam plicata, margine subcartilagineo irregulariter undulato-sinuato vel integro, costa nervisque primariis utrinque circiter 6 versus marginem rete venularum anastomosantibus subtus satis prominentibus. *Scapi* floriferi purpurascens ad 10 cm. alti, 2–3 mm. diametro, dimidio superiore uno pari foliorum spathulorum obtusorum circiter 2 cm. longorum, 7 mm. latorum, tum sub inflorescentiis ipsis duo paribus imbricatis foliorum minorum oblongo-ovatorum obtusorum sessilium circiter 1.2 cm. longorum 5 mm. latorum praediti. *Inflorescentiae* congeste corymbosae cymoso-thyrsoideae, 2–3 cm. longae, 2.5–3.5 cm. diametro, femineae pauperiores; bractee in pedunculis ramorum vel basi cymarum oblongae obtusae manifeste connatae, circiter 7 mm. longae, 3 mm. latae; bractee florum superiores conspicuae oblongae vel obovato-oblongae obtusae parvisissime minutissime ciliatae, 4–7 mm. longae, 1.5–2.5 mm. latae. *Corollae* pallide roseae. *Flores* ♂: corolla cum tubo circiter 5 mm. longa, lobis 1.75 mm. longis 1.5 mm. latis; stamina tubo 3 mm. supra basim inserta, parte libera cum antheris fere 3 mm. longa, igitur non longe exserta. *Flores* ♀: corolla cum tubo 3.5 mm. longa, lobis 1.5 mm. longis atque latis; stamina abortiva 1.2 mm. supra basim fere sessilia; stylus 3.5 mm. longus; ovarium glabrum, ad 2.5 mm. longum, 1.5 mm. latum. *Fructus* absens, teste lectore glaber atque papposus.

ARGENTINA. Cerro Colorado near Lago Lolog, 40° S., 1950 m., December 11th, 1926, *Comber* 861. "Perennial with big taproot. Dioecious, with shiny green leaves and purple stems. Flowers pale pink, sweet-scented. Usually found in the heavier soils near the snow."

This apparently belongs to the Section *Euvaleriana* Hoeck, and therefore—in spite of its root—has no affinity with the Section

*Valerianopsis* Wedd., series *Macrorrhizae* Briq. It is to be hoped that the characters of the fruit will be verified by cultivation.

***Calceolaria cymbiflora* Sandwith**, sp. nov. [Scrophulariaceae-Calceolarieae]; veri similiter *C. lanceolatae* Cav. atque *C. chubutensi* Skotts. affinis, foliis supra plerumque glaberrimis margine pilis crispulis albis longiusculis multicellularibus vestito, scapis semper conspicue foliatis, floribus saepius duo e foliorum summo pari orientibus, sepalis magnis conspicuis, corollae labio inferiore majore postice apertissimo antice insigniter sursum arcuato inflexoque statim dignoscitur.

*Herba* perennis e radice surculos numerosos 2-3.5 cm. longos edens; surculi foliis rosulatis marcescentibus terminati e quibus surgunt scapi saepius complures foliati satis dense breviter albobulosi atque glandulosi 10-14 cm. alti. *Folia* basi scaporum compluribus paribus aggregata marcescentia, altius internodiis 1-2 cm. longis sejuncta, lanceolata apice obtusa in petiolum brevem attenuata vel fere sessilia, 2.5-3.7 cm. longa, 0.6-1.2 cm. lata, supra glabra nervis immersis, subtus dense breviter glandulosa nervosa, margine pilis albis longiusculis multicellularibus induta; folia superiora elliptica sessilia, 0.8-2.2 cm. longa, 0.3-0.8 cm. lata, indumento simili sed summa supra parce glandulosa; internodium summum 3.5-6 cm. longum. *Flores* scapos terminantes e summo foliorum pari solitarii vel saepius duo, pedicellis 3-6 cm. longis, in eodem scapo fere aequalibus vel eo floris lateralis nonnunquam multo brevior. *Sepala* magna conspicua, late ovata obtusa vel suborbicularia, dense breviter glandulosa, basi glabrescente multinervia excepta, 5-6.5 mm. longa, 3-5.5 mm. lata. *Corolla* magna speciosa, flavo-aurantiaca, intus maculata; labium superius glandulosum calyce brevius ad 5 mm. altum; labium inferius cymbiforme, extra satis dense glandulosum igitur pulvere adhaerente sordidum, late longeque apertum, siccitate ad 2 cm. longum, antice subito insigniter erecto-inflexum, ibi fere ad 1.5 cm. altum, 1.5-1.7 cm. latum (latitudine labii applanati aestimata).

ARGENTINA. Territory of Neuquen; Cerro Lotena, between Neuquen and Zapala, 900-1800 m., October 14th, 1925, *Comber* 82. "Perennial with creeping suckers from the sunny side of nearly all rocks, bushes and *Opuntia* clumps in exposed places, usually in sand, 4-8 in. high. Flowers orange-yellow, spotted inside. Leaves slightly hairy, often spotted. Good rock plant if hardy."

A very distinct and interesting species. The leaves are more spaced-out even than those of Cavanilles' much-maligned figure of *C. lanceolata*, and the true affinity remains doubtful. The correct application of the name *lanceolata* is a necessity for the determination of the species of this group, and it seems that Skottsberg's conception of it is the best. Specimens named by him *C. lanceolata* have been lately examined, as well as authentic examples of *C. acutifolia* Witasek, *C. mendocina* Phil., *C. chubutensis* Skotts., and *C. Bergii* Hieron.



## XVIII.—MISCELLANEOUS NOTES.

We learn that the Director, who is on a visit to New Zealand on behalf of the Empire Marketing Board, has been made an Honorary Member of the New Zealand Institute.

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The following appointments have been made by the Secretary of State for the Colonies :—MR. F. J. NUTMAN, B.Sc., A.R.C.S., Plant Physiologist, Amani Institute ; MR. W. O. SUNMAN, B.Sc., Assistant Agricultural Officer, Kenya ; MR. M. C. M. BRIDGES, Produce Inspector, Nigeria ; MR. J. W. WALLACE, B.Sc., Superintendent, Agricultural Department, Nigeria ; MR. H. MUSK, District Agricultural Officer, Tanganyika ; MR. F. G. HARCOURT (Curator and Agricultural Superintendent, Dominica) to be Superintendent of Agriculture, Grenada (*K.B.* 1920, p. 219).

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**Botanical Magazine.**—Part ii of Vol. clii (1926) of the Botanical Magazine, which was published in January, 1928, contains the following illustrations :—

*Venidium fastuosum* Stapf (t. 9127)—a new combination for *Arctotis fastuosa* Jacq.—with large terminal heads of flowers whose ray-florets are orange with dark purple-brown bases, from Cape Colony and South-west Africa ; *Pleurothallis* (?) *ophiocephala* Lindl. (t. 9128), a species with four pollinia, grown at Kew from specimens received from Central America ; *Prunus* (*Cerasus*) *cantabrigiensis* Stapf (t. 9129), known only from cultivated specimens originally obtained from gardens in Canton ; *Celsia bugulifolia* Jaub. & Spach (t. 9130), with a curious yellowish-green corolla traversed by purple and green veins, from the Near East ; *Abelia triflora* R. Br. (t. 9131), a charming ornamental shrub with pink buds and white corollas, from the Western Himalaya ; *Rhododendron Kotschyi* Simonkai (t. 9132), a characteristic shrub with rose-coloured flowers, from the Transylvanian mountains ; *Erica pageana* L. Bolus (t. 9133), from Cape Province ; *Photinia priono-phylla* C. K. Schneider (t. 9134), with corymbs of white flowers and crimson fruit, from Yunnan ; *Colchicum cilicicum* Dammer (t. 9135), a very handsome and freely flowering plant with large leaves, from Cilician Taurus at altitudes up to 2,200 m. ; *Calystegia tuguriorum* Hook. f. (t. 9136), from New Zealand, Chatham and Stewart Islands ; *Erythraea scilloides* Chaub. (t. 9137), a lovely little plant, first noticed in Pembrokeshire in 1918, and now added to the British flora ; *Primula pinnatifida* Franch. (t. 9138), a charming little Alpine plant with deep indigo blue flowers, from North-west Yunnan and Szechuan at altitudes of 3,500 to 4,500 m.